

Notice of Allowability

Application No.

10/658,126

Examiner

Carlos Lopez

Applicant(s)

WAN ET AL.

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/22/05 and 10/24/05.
2. ☒ The allowed claim(s) is/are 1-6 and 9-14 and 15
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 10/24/05.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Henry Heines on 10/24/05.

The application has been amended as follows:

The title was amended to read as follows:

~~Silicon nitride/silicon carbide nano-nano-composite~~ Method of Forming Silicon Carbide and Silicon Nitride Composite

Claim 1 was amended to read as follows:

Claim 1 (Currently Amended): A method for forming a dense composite of silicon nitride and silicon carbide, said method comprising:

(a) mechanically activating a powder mixture of amorphous silicon nitride and silicon carbide in the presence of at most 1% by weight of metal oxide densification aids, said powder mixture consisting essentially of particles of about 1 nanometer to less than 100 nanometers in diameter; and

(b) consolidating said powder mixture so activated into a continuous mass by compressing said powder mixture while passing an electric current through said powder

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mixture, to achieve a fused mass of silicon nitride and silicon carbide crystals.

Claim 2 was amended to read as follows:

Claim 2 (Currently Amended): The method of claim 1 in which said mechanically activated powder mixture resulting from step (a) consists essentially of particles of about 1 micron to about 10 microns in diameter, and said fused mass produced in step (b) consists essentially of crystalline grains of about 1 nanometer to **less than** 100 nm in diameter.

Claim 3 was amended to read as follows:

Claim 3 (currently amended): The method of claim 1 in which said mechanically activated powder mixture resulting from step (a) consists essentially of particles of about 1 micron to about 5 microns in diameter, and said fused mass produced in step (b) consists essentially of crystalline grains of about 1 nanometer to **less than** 50 nm in diameter.

Claims 7-8,15-17, 19-40 are cancelled.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: The cited prior art fails to disclose or reasonably suggest mechanically activating a powder mixture of silicon carbide, silicon nitride and at most 1% by weight of a metal oxide densification aid, wherein the powder mixture consist essentially of particles less than

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100nanometers in diameter in combination with the claimed consolidation of the powder mixture by compressing and passing an electric current through the powder mixture.

The cited prior art, such as US 6,133,180 discloses the claimed mixture having the claimed particle size. However, US 6,133,180, specifically teaches away from using a sintering aid/densification aid below 5% in col. 6, lines 20ff.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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